

Two-Step Proposal Submission Process

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ROSES Omnibus Solicitation

The Science Mission Directorate (SMD) solicits research via the omnibus solicitation Research Opportunities in Space and Earth Sciences (ROSES).

- “Omnibus” in this case refers to some basic rules that cover all individual program elements (the actual calls for proposals) within ROSES, but to a great extent the program elements are configurable.
- One thing that can be changed is whether a preliminary summary of the research, such as a Notice of Intent (NOI) or a Step-1 proposal is requested or required.

This presentation will focus on the details of how and when we request an NOI vs. require a Step-1 proposal and how we respond to proposers.

The Two-Step Submission Process

- SMD rarely if ever required notices of intent or any prerequisite for research (e.g., ROSES) proposal submission in the past.
- This method has been used for "Downselects" for flight projects, in which a few proposers would get some study funds for a year and then one would be selected to fly.
- Historically, prior to a couple few years ago, only the Land Cover/Land Use Change Earth Science ROSES program had been using a two-step process in which preliminary proposals were evaluated and only some proposers were invited to submit a Step-2.
- The concept of a two-step process was first discussed more broadly within the Science Mission Directorate in late 2011 as a way to increase the efficiency of the proposal process.

The Two-Step Submission Process

- NSF's Biology Division spoke to SMD in 2011 after announcing that starting in January 2012 that agency would only take full versions of proposals in the top half of the peer evaluation of the preliminary (Step-1) proposals.
- The concept of a two-step submission process seemed to have promise for diminishing the number of proposers who pointlessly write and review proposals, but the way the NSF implementation bans submission of a full proposal later seemed unforgiving, given that it had not been tested.
- Keeping in mind that the primary goal is to get the best research, not just increase efficiency, some other versions of this concept were tried

The Two-Step Test in 2012

- A version of two-step process was first tested with the ROSES Cassini Data Analysis Program in spring of 2012. Proposers were told that a 3-page Step-1 proposal was required, but that they could later submit their full Step-2 proposal in any case (it was not "binding" in the ROSES parlance).
- Just knowing everyone who was proposing was useful, as it allowed the assembling of a conflict free review panel in advance of the normal due date. Normally only 50% of proposers submit the optional notice of intent to propose.
- All proposers were encouraged to submit their full Step-2 proposal.
- Single mail-in reviews of the 3-page Step-1 proposals were compared with the peer review panel evaluations of the full Step-2 proposals.

The Two-Step Test in 2012

- While there was a fairly good correlation in general between the evaluation of the preliminary and full proposals, there was one proposal that was highly rated at Step-2 but faired poorly at Step-1 and thus might have been rejected.
- While its possible that this lackluster Step-1 by an experienced proposer was the result of knowing that the Step-2 could be submitted later anyway, it raised concern about how the brief Step-1 proposals are assessed.
- What if the agency merely discouraged proposers after Step-1, would that increase efficiency without preventing that highly rated proposal from getting through?

Discouraging vs. Barring Submission

The difference between merely discouraging the submission of a full proposal vs. outright barring it is quite significant for a number of reasons (good, ambiguous and maybe bad):

- It is more forgiving of error/uncertainty, which is presumably higher in a brief statement of planned work
- It allows for a fast internal evaluation based on programmatic factors (e.g., SMAP) or relevance, rather than a rigorous Merit evaluation.
- Legal advice to us was that feedback based on the Step-1 proposal must be generic because it's an ongoing procurement

Important Caveat

Reviewers of Step-2 proposals are never told whether the Step-1 was encouraged or not.

Heliophysics 2013 as an example

- For the 2013 Heliophysics Supporting Research program 306 Step-1 proposals were submitted. Only 12 were discouraged as because they were deemed non compliant. All 294 others (96%) were invited to proceed.
- For the 2013 Heliophysics Guest Investigators (H-GI) program 174 Step-1 proposals were submitted. Only 73 were encouraged and only 83 submitted Step-2 proposals. 22/83 (=27%) were selected.
- The discouragement made a difference to the proposers
- In 2013 None of the proposals discouraged at Step-1 were selected for funding at Step-2, so it seems that the evaluation of the Step-1 was a good predictor.

Heliophysics 2014 SR as an example

- For the 2014 Heliophysics Supporting Research program 323 Step-1 proposals were submitted. 168 were encouraged and 221 submitted Step-2 proposals. Of those 221 Step-2 proposals, 166 were encouraged at Step-1 (and 55 not).
- Overall 39 (~18%) were selected.
- Of the proposals discouraged at Step-1, 28% were in the competitive range and 11% were funded at Step-2.
- Of the proposals encouraged at Step-1, 38% were in the competitive range and 20% were funded at Step-2.
- This suggests that the Step-1 is a fairly good but imperfect predictor of the success of the Step-2, since some of the Step-1s that were discouraged were followed up with successful Step-2 proposals (~1/3 submitted a Step-2 and only 10% of those were successful).

Planetary Science 2014

- The Planetary Science Division (PSD) research program was restructured in 2014. Core calls organized by object (Mars) or part of an object (Atmospheres, Geology) that had been solicited for years were replaced with new ones that align with Planetary Science Division goals (Emerging Worlds, Habitable Worlds, Solar System Workings) and focus more on process.
- There was anxiety in the community as many asked to which program they should submit their proposals.
- PSD required (up to one page maximum) Step-1 proposals for almost all calls and the (internal) evaluation focused on whether proposals had been submitted to the right call. PSD discouraged ~100 out of 1500 Step-1 proposals but recommended that these be sent to other calls within PSD based on relevance.
- None of the Step-1 proposals were evaluated for Merit.

Specific Examples from PSD 2014

- Planetary Data Archiving, Restoration, and Tools got 143 Step-1 proposals 14 of which were discouraged and redirected.
- Of the 129 encouraged only 100 were received but 5 more came in from other programs. 23/105 (22%) were selected. 2 out of the 5 redirected from other programs (SSW and LDAP) were selected.
- Examples from 2014 Step-1s discouraged:
 - Cassini Data Analysis: One (of 101) discouraged as non compliant
 - Discovery Data Analysis: One (of 32) redirected
 - Emerging Worlds: 19 (of 219) redirected and 4 non compliant
 - Exobiology 9 (of 186) redirected
 - Lunar Data Analysis 8 (of 82) redirected
 - Planetary Data Archiving, Restoration, and Tools 14 (of 143) redirected
 - Planetary Science and Technology Through Analog Research 14 (of 69) redirected

Some Proposals Moved after Review

- The Cassini Data Analysis and Participating Scientist (CDAPS) Program received 101 Step-1 proposals, 1 of which was discouraged as non compliant.
- Of the 100 encouraged at Step-1, 78 were received as Step-2 proposals. 18/78 (23%) were selected.
- However, two proposals that were submitted to and reviewed by Solar System Workings and were found to be of excellent Merit were forwarded to CDAPS. These were assessed by the program scientist for Relevance, and were also funded by CDAPS.

Current State of Affairs

- At the moment all of these use a version of the two-step process:
 - all ROSES calls for proposals in Heliophysics,
 - most calls (17/21) in Planetary Science,
 - a few calls in Astrophysics (K2, WFIRST, SOFIA), and the Exoplanet Research Program (joint Astrophysics & Planetary Science)
- Most merely require a brief statement of the research planned (no more than one page) and proposals may be submitted whether or not they are "encouraged" or not.
- Only two in Heliophysics (Guest Investigators and Supporting Research) require three-page Step-1 proposals.
- Rules about changes to the team varies from Division to Division (PSD is more permissive than Helio) but there are good reasons for this.

Thank you

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